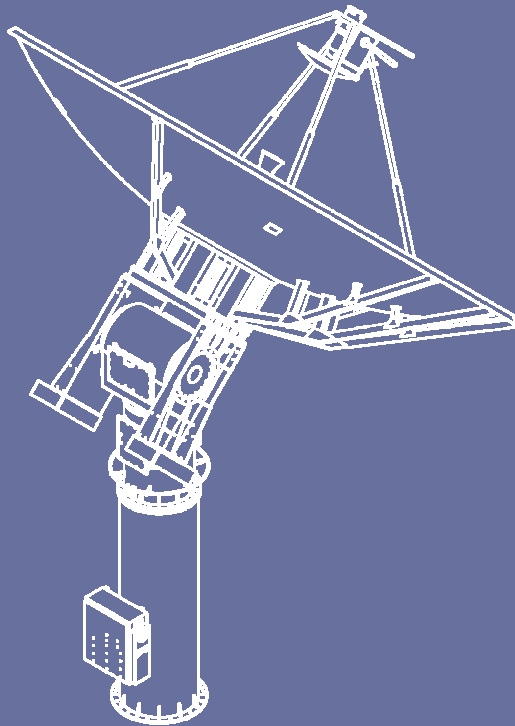


NASA 7 Meter Systems Upgrade Preliminary Design Review



TCS, Inc.

October 19, 2005



Agenda

- System Requirements
 - Overview of Arcata System Requirements Document Version 1.1
 - Overview of TCS Technical Proposal
- Design Solutions
 - System Block Diagram
 - Pedestal Design
 - Antenna & Feed Design
- Program Schedule

System Requirements

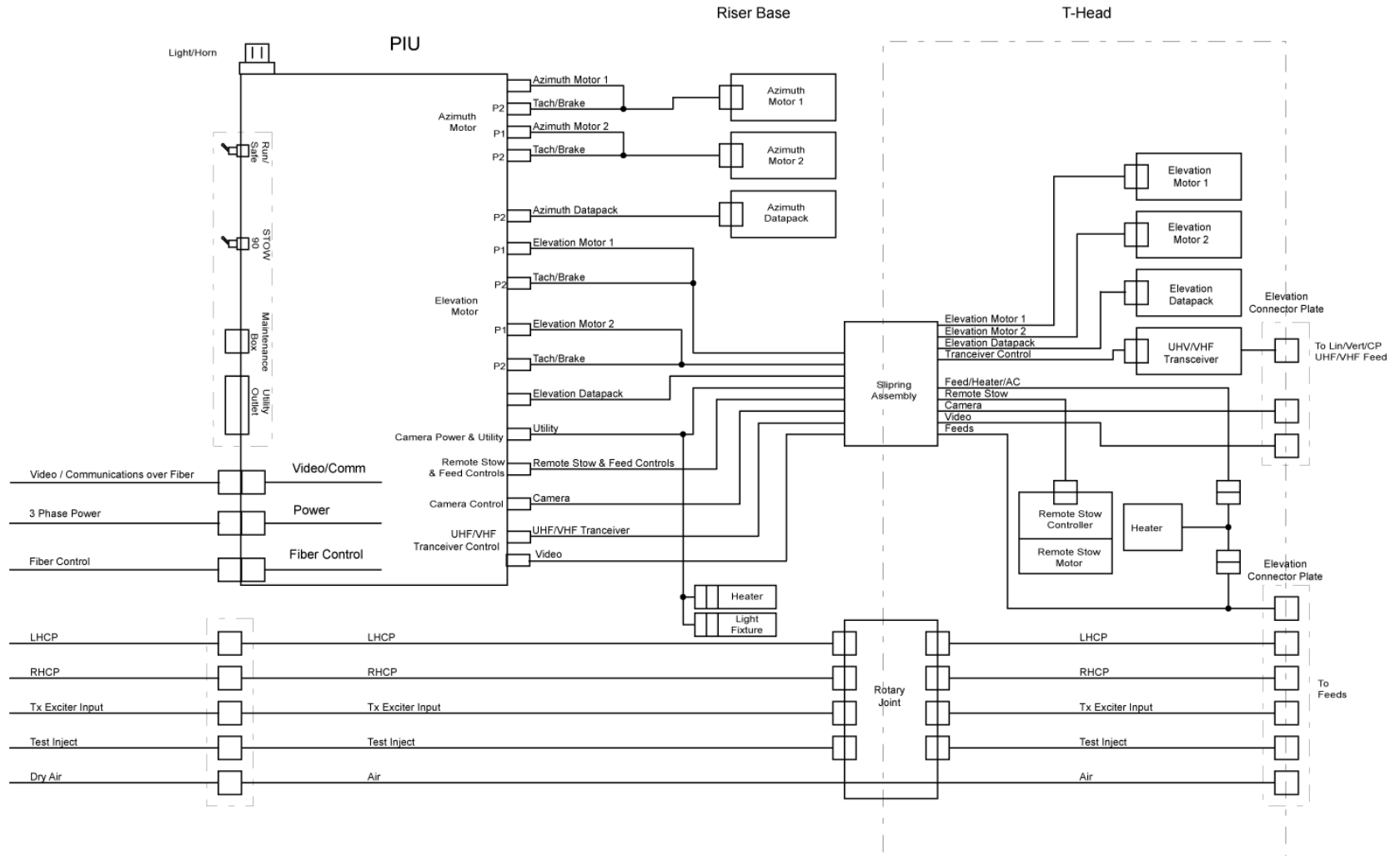
- Summary of TM 7-meter Systems Upgrade
 1. GFE List
 - 7-meter Reflectors
 - ACU-M1 and Pedestal Interface PCB
 - Riser Extension
 - L&S-Band Uplink System
 - Camera System
 - U/VHF Transceiver with Amplifier

System Requirements *(continued)*

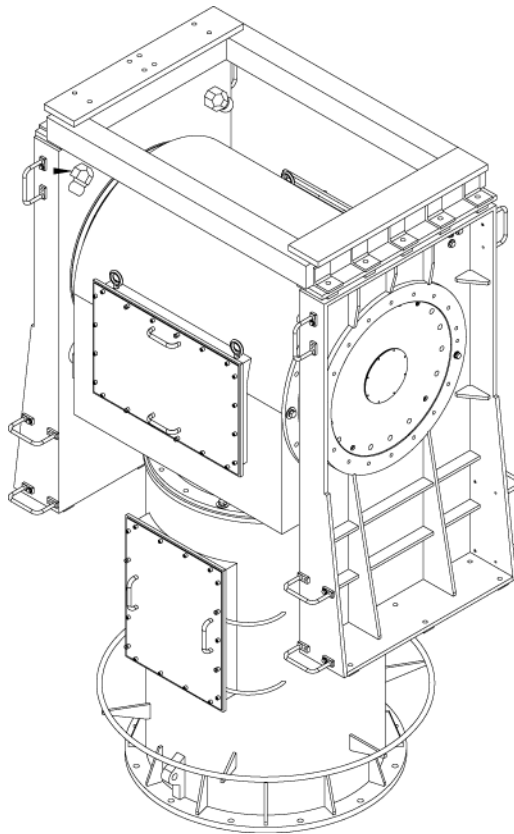
2. TCS Equipments

- Dual-Drive Pedestal Model 6000
- Pedestal Interface Unit
- Reflector Interface Structure to Pedestal
- L&S-Band Feed with Tx/Rx & Test Inject, RHCP/LHCP
- C-Band Cassegrain Feed
- UHF/VHF antenna
- C-Band Down Converter
- System Power and Control Cables
- Documentation Package

System Block Diagram



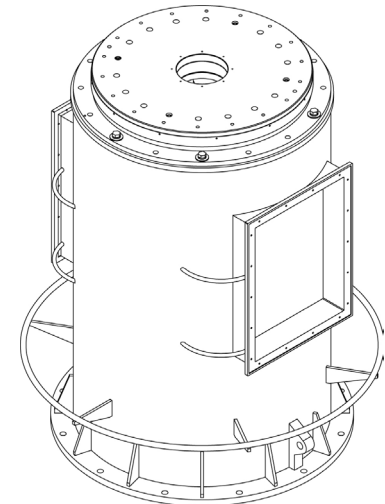
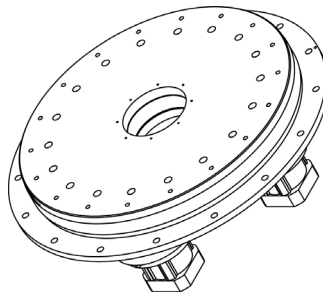
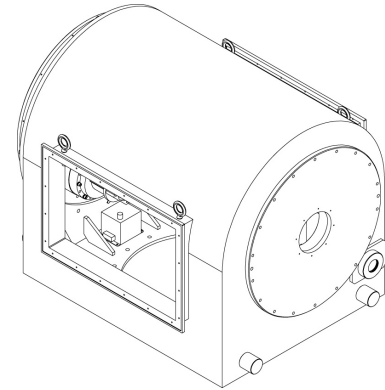
Pedestal Design



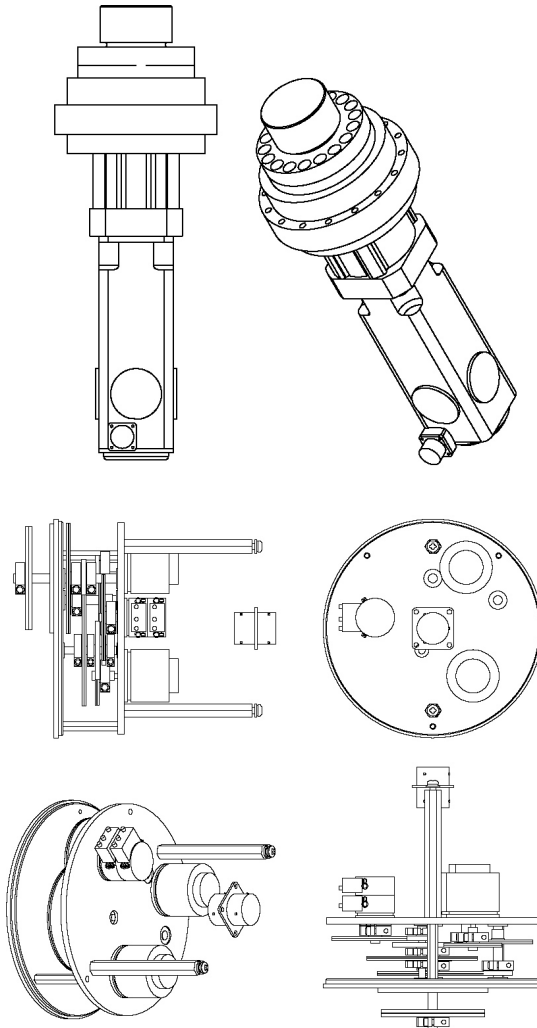
- 20,000 ft-lbs Max Output Torque
- Dual-Opposed Drive
- 20°/s Velocity
- 40°/s² Acceleration

Pedestal Design *(continued)*

- Same Gearbox for Elevation and Azimuth Axes



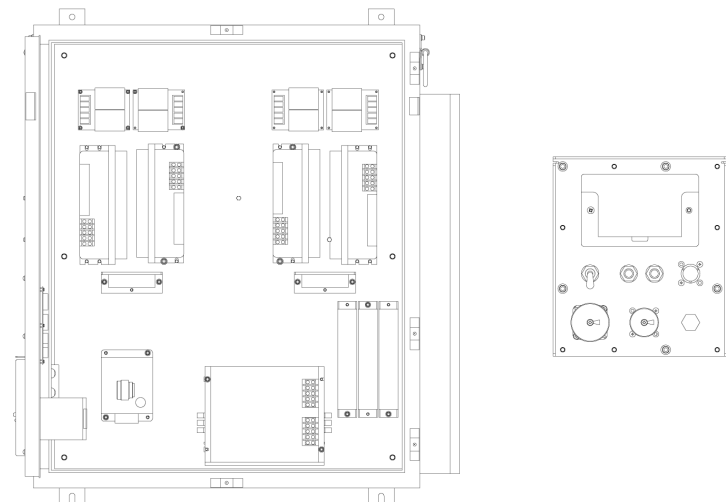
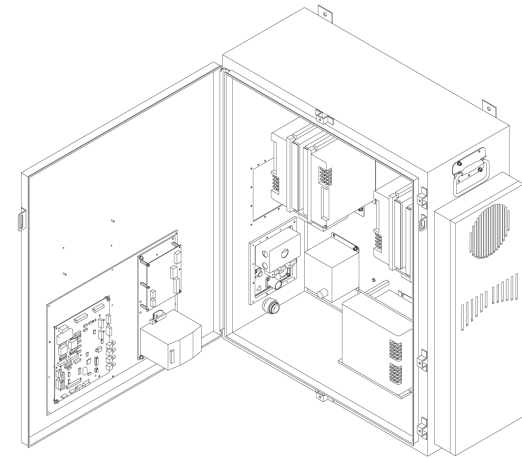
Pedestal Design *(continued)*



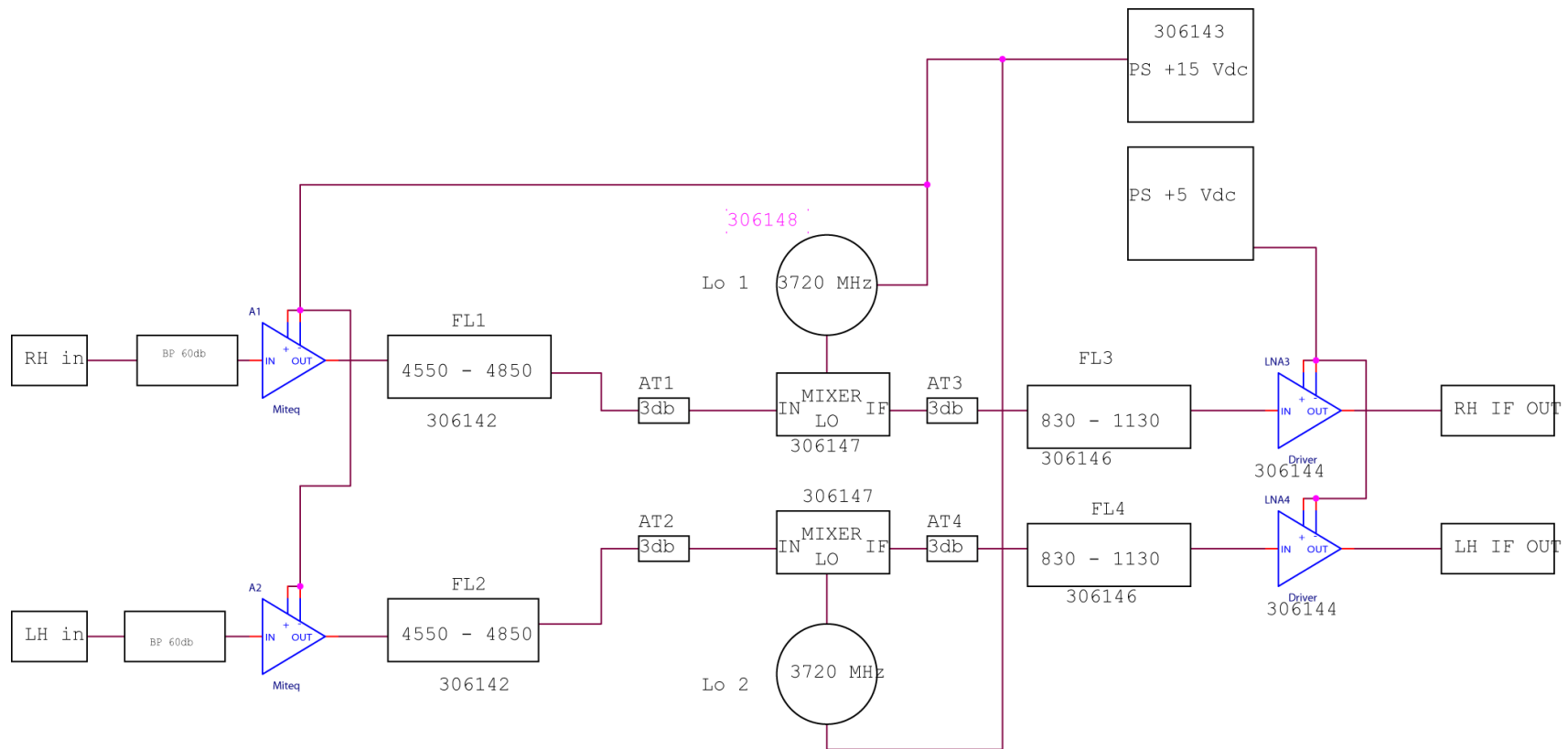
- For Both Axes
 - Dual Speed Data Pack Assembly
 - DC Brush Motors with Tach and Brake
 - State of the Art Gearhead Assembly with Exceptional Stiffness

Pedestal Design *(continued)*

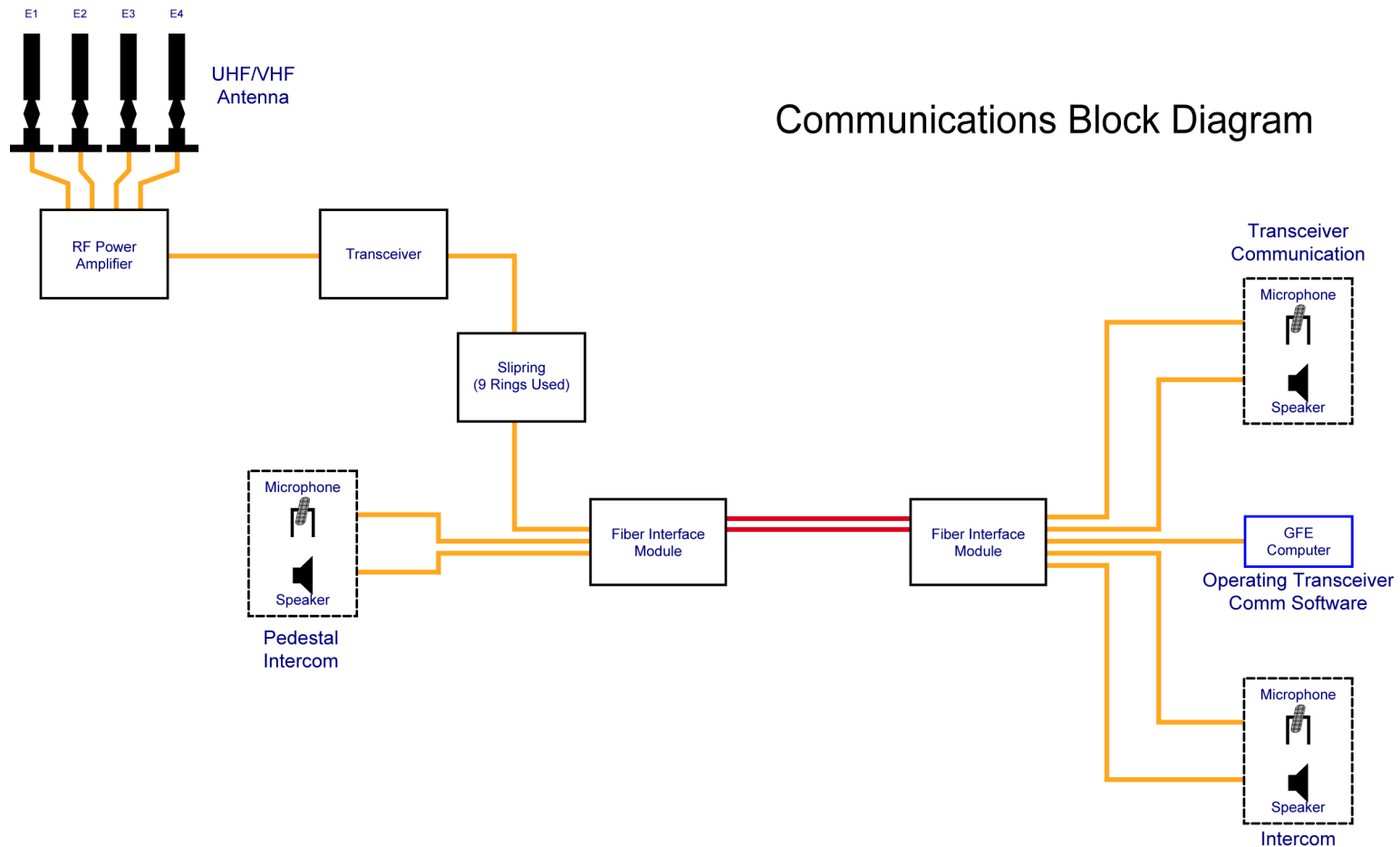
- Pedestal Interface Units
- Control Interface PIU
 - Interface PCB
 - DC Power Supply
 - I/O Connector Plate
- Power PIU
 - AC to DC Servo Power Module
 - Quad Servo Amp (PWM)
 - Associate Filters and Breakers



C-Band Downconverter

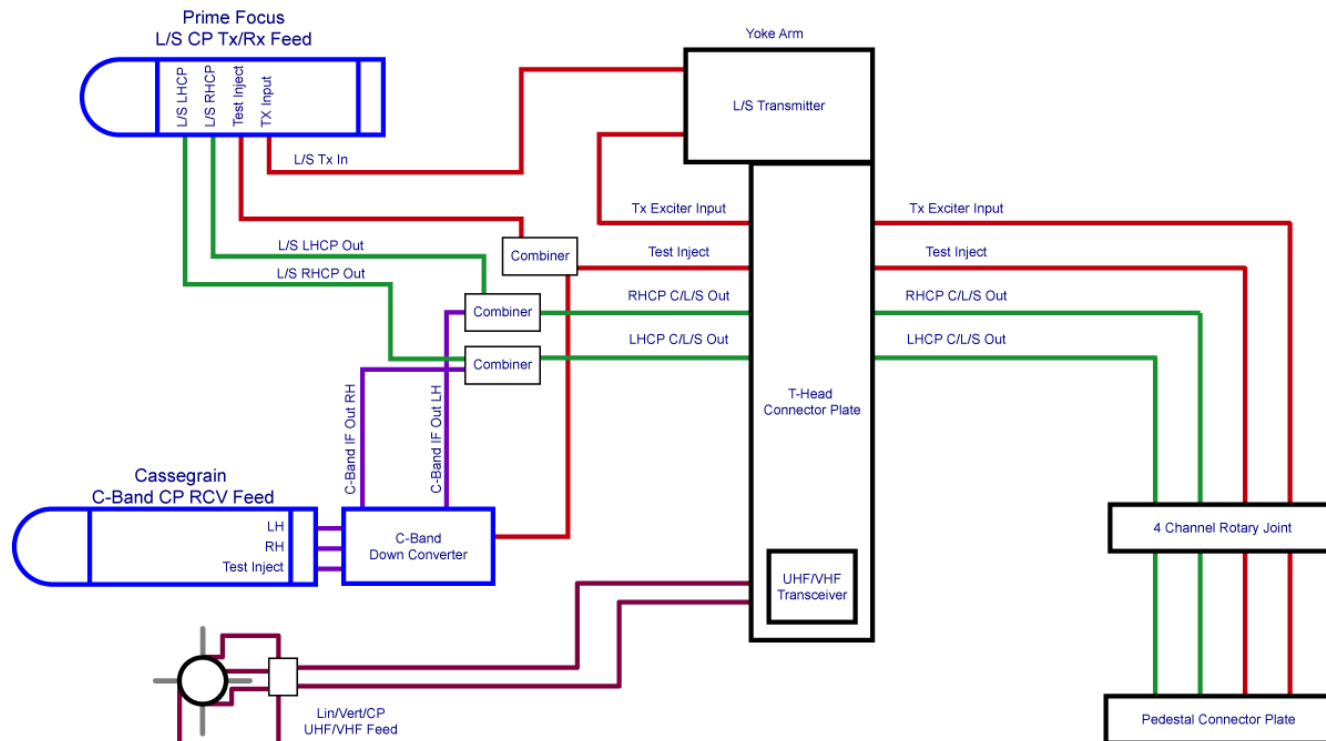


Communication System



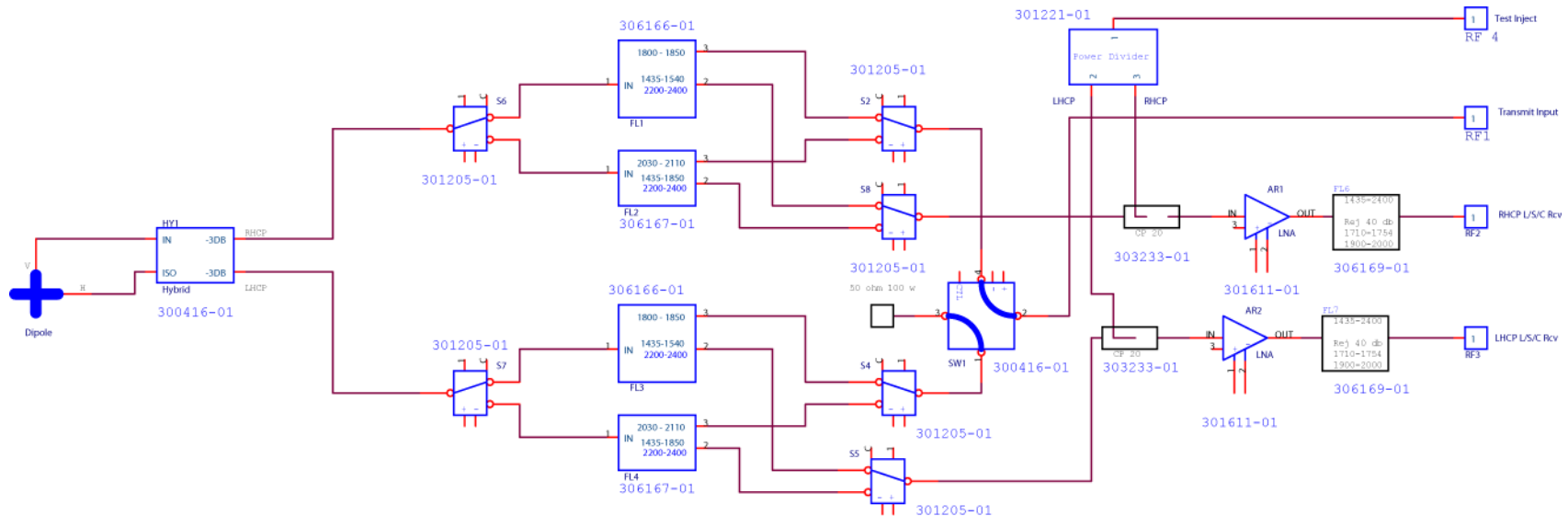
Antenna & Feed Design

- 3-Feed Configuration
 - L & S-Band Prime Focus
 - Cassegrain C-Band
 - VHF/UHF Prime Focus



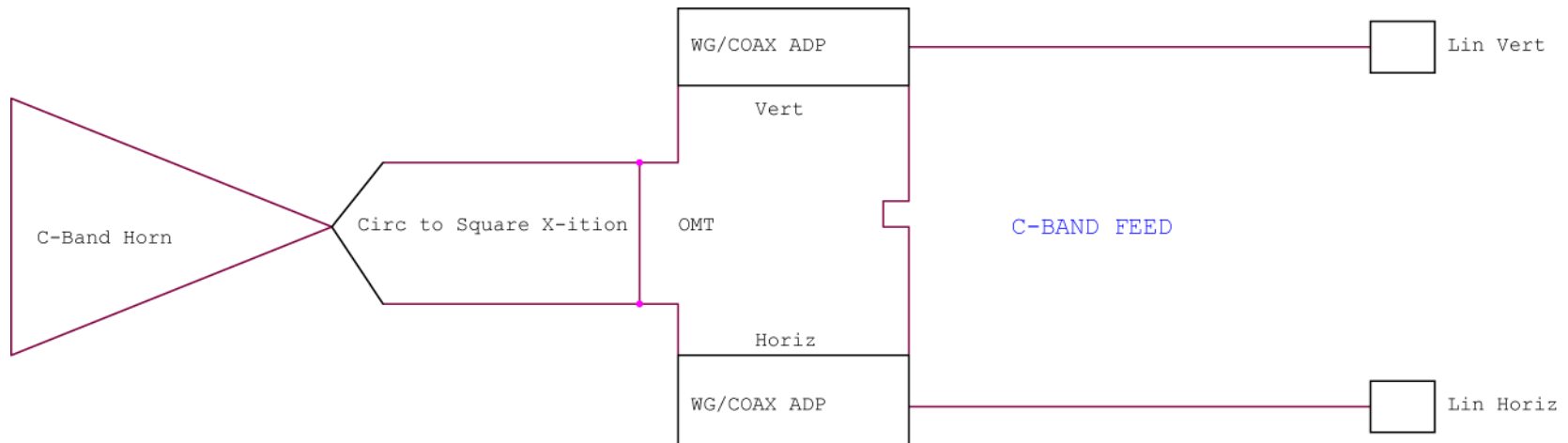
Antenna & Feed Design *(continued)*

- L & S Band Prime Focus Feed
 - Conical Scan
 - Variable Speed



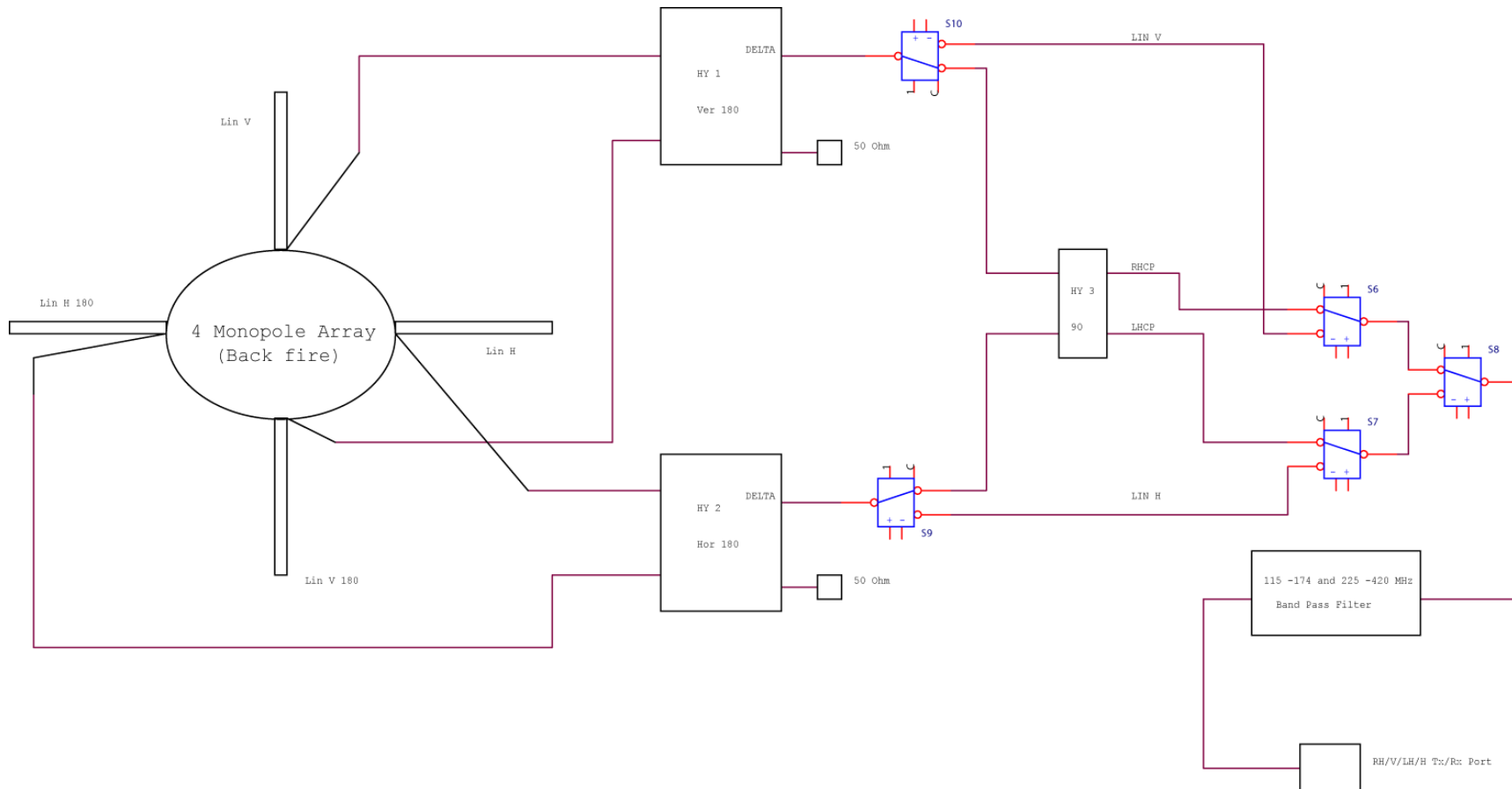
Antenna & Feed Design *(continued)*

- Cassegrain C-Band



Antenna & Feed Design *(continued)*

- VHF/UHF Prime Focus



Schedule

